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10/736,955	12/15/2003	Jizheng Xu	MS1-1694US	5538
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LEE & HAYES PLLC 421 W RIVERSIDE AVENUE SUITE 500 SPOKANE, WA 99201			EXAMINER WERNER, DAVID N	
			ART UNIT 2621	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lhptoms@leehayes.com

Office Action Summary

Application No.

10/736,955

Applicant(s)

XU ET AL.

Examiner

David N. Werner

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in paragraphs [0023], [0024], and [0051] of the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, the references have not been considered. In addition, the listing fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "224" has been used to designate both an FGL Base Layer Encoder and an Enhancement Layer Transcoding Module in figure 2. It is suggested that the reference number for the transcoder be replaced with "222" designated in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "908" in paragraph 0032. Amendments to the specification or corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: in paragraph [0018], line 6, "well-known" is misspelled as "well know", and in paragraph [0036], line 4, "four frames buffers" should be "four frame buffers".

Appropriate correction is required.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34, and 35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 10, 13, and 21 of copending Application No. 10/725762. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both directed to encoding a layered video with a base layer and one or more enhancement layers and transmitting the video based on a high-quality bit rate determined according to network capacity.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 101

7. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

8. Claims 10-36 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Regarding claims 10-27, in a computer-related claim, the word "comprising" is not considered sufficient for linking a computer program with a computer-readable medium in statutory form. It is suggested that the word "comprising" in the preamble of claim 10 and claim 19 is replaced with the phrase "encoded with" and in the dependent claims, the word "comprise" is replaced with the phrase "are encoded with". Regarding claim 29, the "computer-executable instructions" are not specified as encoded on a computer-readable medium. See *Lowry*, 32 F.3d at 1583-84, 32 USPQ2d at 1035. In addition, the statement in paragraph [0042] that "computer readable instructions" may be embodied "in a modulated data signal such as a carrier wave", places the claims in non-statutory form, as carrier waves have been held as non-statutory. See *O'Reilly v. Morse*, 56 U.S. (15 How.) 62, 112-114 (1853). Regarding claims 28-36, claim 28 is in means-plus-function format, and invokes 35 U.S.C. 112, sixth paragraph. Accordingly, a "computing device" with "means for" data processing will be limited to a software embodiment on a computer such as that shown

in figure 6. Then, since a software embodiment of claim 28 may be embodied on a carrier wave, it and its dependent claims are non-statutory.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 29 recites the limitation "the computer-executable instructions for encoding" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim because parent claim 28 does not specify "computer-executable instructions".

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1, 2, 4, 5, 7-11, 13, 14, 16-20, 22, 23, 25-29, 31, 32, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,014,693 A (Ito et al.) in view of US Patent 5,953,506 A (Kalra et al.). Ito et al. teaches a system for delivering video over a network with video data extraction based on the transfer bit rate.

Regarding claims 1, 10, 19, and 28, Ito et al. teaches a video server computer (figure 1) that stores indexed video data (figure 2). The indexed video is in an MPEG format comprising I-frames, P-frames, and B-frames (column 5, lines 51-62). Regarding the "enhancement layer bitstream", When video is encoded on the server, the server creates an index that creates a series of layers for the video (column 6, lines 1-8). The base layer contains all I-frames, B-frames, and P-frames, and higher layers contain less data. For example, the first layer contains all I-frames and P-frames, the second layer contains all I pictures and a selected number P-frames, and so on, until the highest layer contains only I-frames from selected GOPs (figure 3). Regarding determining network throughput characteristics, the video server is connected with a series of clients over a network (figure 5), and in one embodiment, network load sensor 17 periodically measures the load on the network (column 7, lines 51-57). Regarding calculating a new bit rate, if the measured load L_n exceeds a reference load L_{d1} , representing the maximum load at which video transfer at the current bit rate can be sustained, video data assembler 14 selects a lower bit rate setting such that the next measured network load becomes lower than L_{d1} (column 7, lines 57-67). Also, if the measured load L_n is smaller than a reference value L_d , video assembler 14 increases the transfer bit rate (column 8, lines 25-33). Regarding re-encoding the enhancement layer bitstream, video data delivery unit 15 reassembles the video and transfers it to a client according to the new bit rate (column 8, lines 1-7). Note that in bit rates lower than the maximum bit rate, not every frame is decoded (column 6, lines 43-56).

The present invention differs from Ito et al. in that in the present invention, the video is divided into a base layer and enhancement layers that contain more data than the base layer, as defined in paragraph [0011], and in Ito et al., the base layer has the highest video quality (figure 3). Kalra et al. teaches a system for transmitting scalable multimedia data. In an MPEG embodiment, DCT coefficients are selectively activated in higher layers (column 5, lines 36-56). The base layer for a DCT block is the DC coefficient (figure 6A), and in higher layers, additional AC coefficients are added according to the desired bit rate (column 17, lines 9-23). Note that the reduction to practice in Kalra et al. was a software device (column 7, lines 35-36). Kalra et al. selectively drops frames like Ito et al. (figure 9C), but Kalra et al. differs from the present invention in that in the present invention, the base layer is not decoded, and in Kalra et al., the first step is to conventionally decode an MPEG encoded video (column 7, lines 42-46).

Ito et al. discloses the claimed invention except for adding enhancement layers to a base layer of a video as bandwidth increases. Kalra et al. teaches that it was known to selectively add information to a scalable video according to several factors, including bandwidth. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to build a base layer and enhancement layers of a video as taught by Kalra et al., since Kalra et al. states in column 2, lines 27-49 that such a modification would allow different clients to receive customized video streams.

Regarding claims 2, 11, 20, and 29, in Ito et al., the transcoded video is adjusted to consistently deliver video over a network having a variable load to ensure continual

viewing of streaming video (column 2, lines 46-55; column 3, lines 3-11). Regarding claims 4, 13, 22, and 31, Ito et al. discloses three systems for measuring data throughput on a server. In the embodiment of figure 2, video data delivering unit 15 directly measures throughput by measuring how long it takes to transfer a given amount of data (column 6, lines 28-42). In the embodiment of figure 5, network load sensor measures the load placed on network 3 (column 7, lines 51-57), and in the embodiment of figure 7, server load sensor measures the load placed on the server (column 8, lines 54-67). In any event, if a low bit rate or high load is detected, video data assembler 14 and video data delivery unit 15 transmit video data at a reduced rate (column 7, line 58 – column 8, line 4). Regarding claims 5, 14, 23, and 32, if a high bit rate or low load is measured, video data assembler 14 and video data delivery unit 15 increase the bit rate (column 8, lines 25-34). If the throughput remains unchanged between throughput measurements, the bit rate also stays the same (column 8, lines 35-40).

Regarding claims 7, 16, 25, and 35, in Kalra et al., a base stream and additive streams are transmitted via stream management module 20 to a client multimedia device 22 (column 4, lines 13-32) across a network. Regarding claims 8, 17, 26, and 34, in Kalra et al., spatial scaling transcoders 124 encode base stream $\Sigma 0$ with adaptive streams $\Sigma 1$ - $\Sigma 7$ (column 8, lines 59-65). Regarding claims 9, 18, 27, and 36, in Kalra et al., stream selection for a client computer is based on network bandwidth, the computational power of the client computer, and the preferred video for best spatial resolution in the client computer (figure 15B1; column 17, lines 10-59).

14. Claims 3, 6, 12, 15, 21, 24, 30, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. in view of Kalra et al. as applied to claims 1, 10, 19, and 28 above, and further in view of "A Framework for Efficient Progressive Fine Granularity Scalable Video Coding" (Wu et al.). Ito et al. in combination with Kalra et al. discloses the claimed invention except for FGS video encoding. Wu et al. teaches the progressive fine granularity scalable (PFGS) video coding technique. In Ito et al., different layers are achieved by adding frames, and in Kalra et al., different layers are achieved by adding DCT coefficients. Regarding claims 3, 12, 21, and 30, the PFGS encoding system achieves a multi-layered video with a base layer and multiple enhancement layers, as described in the independent claims (abstract). Regarding claims 6, 15, 24, and 33, in PFGS, frames in high-level enhancement layers are predicted from previous enhancement layers without always relying on the base layer (figure 1). This predicted information includes motion vector information. In a PFGS encoder shown in figure 6 of Wu et al., the motion compensation unit takes in as input information from frame buffer 1 and from a motion estimation unit (§ IV). The motion estimation unit in turn does not depend on decoded base layer video, but instead on raw, unencoded video. Then, motion compensation in a high-level enhancement layer is dependent on a reconstructed frame from the enhancement layer.

Wu et al. teaches a PFGS video encoder. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to encode a layered video stream according to PFGS as taught by Wu et al., since Wu et al. states

in section I that such a modification would improve motion estimation accuracy by generating motion vectors from high-quality references.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,434,197 B1 (Wang et al.) teaches a transcoder that re-uses motion vectors from the source video format in the new video format. US Patent 6,477,706 B1 (Hua et al.) teaches a transcoder that allows for real-time editing of the video stream. US Patent 6,798,838 B1 (Ngo) teaches a wireless layered-video device. US Patent 7,099,954 B2 teaches transmission of FGS or PFGS video over the TCP protocol. US Patent Application Publication 2002/0016715 A1 (Apostolopoulos) teaches a system that transmits redundant video packet streams over different routes in a network.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David N. Werner whose telephone number is (571) 272-9662. The examiner can normally be reached on Monday-Friday from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mehrdad Dastouri can be reached on (571) 272-7418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2621

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DNW

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